



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/631,083	07/31/2003	Morio Nakao	TI-35373	2030
23494 7590 06/19/2007 TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			EXAMINER GRAYBILL, DAVID E	
			ART UNIT 2822	PAPER NUMBER
			NOTIFICATION DATE 06/19/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com
uspto@dlemail.itg.ti.com

Office Action Summary

Application No.

10/631,083

Applicant(s)

NAKAO, MORIO

Examiner

David E. Graybill

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims.

- 4) ☒ Claim(s) 12 and 14-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12 and 14-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 June 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

In view of the appeal brief filed on 2-7-7, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31. A new notice of appeal fee and appeal brief fee will not be required for applicant to appeal from the new Office action. Any appeal brief filed on or after September 13, 2004 must comply with 37 CFR 41.37.

The amendment filed 11-15-6 has been entered.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features of claim 14 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is

to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12 and 14-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 12 there is insufficient antecedent basis for the language "the step of attaching solder balls to said second surface of said patterned metal layer exposed in said windows," "said second surface of said patterned metal layer exposed in said windows," and, "said windows."

In claim 14 there is insufficient antecedent basis for the language, "the step of exposing said carrier tape to ultraviolet radiation."

In claims 15 and 16 there is insufficient antecedent basis for the language, "said step of applying a second insulating layer."

In claim 17 there is insufficient antecedent basis for the language, "said step of providing a substrate with said first insulating layer."

Claim 12 and 15-17 have not been rejected over the prior art because, in light of the rejection supra, there is a great deal of confusion and uncertainty as to the proper interpretation of the limitations of the claims; hence, it would not be proper to reject the claims on the basis of prior art. As stated in *In re Steele*, 305 F.2d 859, 134 USPQ 292 (CCPA 1962), a rejection should not be based on considerable speculation about the meaning of terms employed in a claim or assumptions that must be made as to the scope of the claims. Also see *In re Wilson*, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970) (if no reasonably definite meaning can be ascribed to certain claim language, the claim is indefinite, not obvious). See also MPEP 2143.03 and 2173.06.

In the rejections infra, generally, reference labels are recited only for the first recitation of identical claim elements.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mostafazadeh (6888228) in combination with Fukutomi (20020094606).

At column 2, line 38 to column 4, line 38, Mostafazadeh discloses the following:

Re claim 18: A method for packaging an integrated circuit chip, comprising: providing an integrated circuit chip 130; providing an insulating carrier tape 220 with a patterned metal layer 120 with a first side adhering to the insulating carrier tape; positioning the integrated circuit chip over a second side of the metal layer and electrically connecting 140 the integrated circuit chip to the metal pattern; encapsulating 170 the chip and the electrical connections; removing the carrier tape to uncover the entire first side of the metal layer.

Re claim 14: The method according to Claim 18, wherein said step of removing said carrier tape is inherently preceded by the step of exposing said carrier tape to ultra-violet "UV" radiation.

However, Mostafazadeh does not appear to explicitly disclose the following:

Re claim 18: and then applying an insulating layer to the first side uncovering a portion of the first side of the patterned metal layer.

Nonetheless, in the abstract, and at paragraphs 126, 128, 144, and 170, Fukutomi discloses a process of then applying an insulating layer 6/8 to the first side uncovering a portion of the first side of the patterned metal layer 7/600. Moreover, it would have been obvious to combine this disclosure of Fukutomi with the disclosure of Mostafazadeh because, as disclosed by Fukutomi, it would protect the metal layer.

Also, Mostafazadeh does not appear to explicitly disclose the following:

Re claim 19: The method of claim 18, in which the insulating layer is thinner than the insulating carrier tape.

Notwithstanding, as reasoned from well established legal precedent, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose these particular dimensions because applicant has not disclosed that, in view of the applied prior art, the dimensions are for a particular **unobvious** purpose, produce an unexpected result, or are otherwise critical. For that matter, applicant has not disclosed that the particular claimed dimensions are for **any** purpose or produce **any** result. Moreover, it appears prima facie that the process would possess utility using another dimension. Indeed, it has been held that mere dimensional

limitations are prima facie obvious absent a disclosure that the limitations are for a particular **unobvious** purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukutomi (20020094606).

At paragraphs 6-8, 98, 128, 144, 168, 170-173 and 185, Fukutomi discloses the following:

Re claim 18: A method for packaging an integrated circuit chip, comprising: providing an integrated circuit chip 54; providing an insulating carrier 51 with a patterned metal layer 52 with a first side adhering to the insulating carrier tape; positioning the integrated circuit chip over a second side of the metal layer and electrically connecting 56 the integrated circuit chip to the metal pattern; encapsulating 55 the chip and the electrical connections; removing the carrier tape to uncover the entire first side of the metal layer; and then applying an insulating layer "solder resist" to the first side uncovering a portion of the first side of the patterned metal layer "Subsequently, a solder resist 8 was coated, and an insulating layer was

formed to the first side uncovering a portion of the first side of the patterned metal layer" "a solder resist layer may be formed on exposed surfaces of the wiring patterns for protecting the wiring patterns."

To further clarify the disclosure of an insulating carrier 51, although Fukutomi discloses, "When an insulating base material is used, there are two methods" Fukutomi does not disclose that there are only two methods. Instead, Fukutomi discloses, With reference to FIGS. 19 [19a-19e], 20 and 21, a description will be given of the seventeenth embodiment of the present invention." Further, Fukutomi discloses as the seventeenth embodiment, "supporting member 51 (FIG. 19a). As the supporting member, an insulating base material such as a polyimide film can be used." Therefore, Fukutomi discloses that in the seventeenth embodiment, illustrated in Fig. 19 (19a-19e), the supporting member is an insulating material. Still further, Fig. 19 (19a-19e) does not illustrate the "two methods," instead, Fig. 19d illustrates the process of removing the insulating carrier 51 to uncover the entire first side of the metal layer. Then, Fukutomi discloses, applying an insulating layer to the first side uncovering a portion of the first side of the patterned metal layer "a solder resist layer may be formed on exposed surfaces of the wiring patterns for protecting the wiring patterns."

However, as the seventeenth embodiment, Fukutomi does not appear to explicitly disclose the following:

Re claim 18: A method for packaging an integrated circuit chip, comprising: tape.

Regardless, as cited, as the seventeenth embodiment, Fukutomi discloses a polyimide carrier film. In addition, as cited, Fukutomi discloses that a polyimide carrier film and a polyimide carrier "tape" are alternatives and equivalents; therefore, it would have been obvious to substitute or combine the film of Fukutomi for or with the tape of Fukutomi. See *In re May* (CCPA) 136 USPQ 208 (It is our opinion that the substitution of Wille's type seal for the cement of Hallauer in Figure 1 would be obvious to persons of ordinary skill in the art from the disclosures of these references, merely involving an obvious selection between known alternatives in the art and the application of routine technical skills.); *In re Cornish* (CCPA) 125 USPQ 413; *In re Soucy* (CCPA) 153 USPQ 816; *Sabel et al. v. The Wickes Corporation et al.* (DC SC) 175 USPQ 3; *Ex parte Seiko Koko Kabushiki Kaisha Co.* (BdPatApp&Int) 225 USPQ 1260; and *Ex parte Rachlin* (BdPatApp&Int) 151 USPQ 56. See also *Smith v. Hayashi*, 209 USPQ 754 (Bd. of Pat. Inter. 1980) (However, there was evidence that both phthalocyanine and selenium were known photoconductors in the art of electrophotography. "This, in our view, presents strong evidence of obviousness in substituting one for the other in an electrophotographic environment as a photoconductor." 209 USPQ at 759.). An express suggestion to substitute one equivalent

component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982). "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) (citations omitted). See also In re Crockett, 279 F.2d 274, 126 USPQ 186 (CCPA 1960); Ex parte Quadranti, 25 USPQ2d 1071 (Bd. Pat. App. & Inter. 1992).

Also, Fukutomi does not appear to explicitly disclose the following:

Re claim 19: The method of claim 18, in which the insulating layer is thinner than the insulating carrier tape.

Nevertheless, as cited, Fukutomi discloses that the second insulating layer thickness is a result effective variable. Moreover, as reasoned from well established legal precedent, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose these particular dimensions because applicant has not disclosed that, in view of the applied prior art, the dimensions are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima

facie that the process would possess utility using another dimension.

Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular

unobvious purpose, produce an unexpected result, or are otherwise critical.

See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

Claim 14, 18 and 19 and rejected under 35 U.S.C. 103(a) as being unpatentable over Fukutomi as applied to claims 18 and 19 immediately supra, and further in combination with Mostafazadeh (6888228).

As the seventeenth embodiment, Fukutomi does not appear to explicitly disclose the following:

Re claim 18: A method for packaging an integrated circuit chip, comprising: tape.

Re claim 14: The method according to Claim 18, wherein said step of removing said carrier tape is inherently preceded by the step of exposing said carrier tape to ultra-violet radiation.

Notwithstanding, as cited supra, Mostafazadeh discloses this process. Furthermore, it would have been obvious to combine this disclosure of

Mostafazadeh with the disclosure of Fukutomi because it would facilitate provision and removal of the carrier film of Fukutomi.

Because, in the appeal brief, applicant insists on a unique interpretation of Fukutomi, claim 18 is alternatively rejected over Mustafazadeh.

Specifically, as applied to claim 18 supra Mustafazadeh discloses the following:

Re claim 18: A method for packaging an integrated circuit chip, comprising: removing the insulating carrier tape to uncover the entire first side of the metal layer. In addition, it would have been obvious to combine this disclosure of Mustafazadeh with the disclosure of Fukutomi because it would facilitate the process of Fukutomi of applying an insulating layer to the first side uncovering a portion of the first side of the patterned metal layer.

In the alternative, claims 14, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Beroz (6737265) and Fukutomi (20020094606).

At column 3, lines 36-42; column 6, line 44 to column 7, line 60; column 8, line 51 to column 10, line 8; column 10, line 30 to column 12, line 19; column 18, lines 37-62; column 23, lines 39-56; and column 25, lines 44-50, Beroz discloses the following:

Re claim 18: A method for packaging an integrated circuit chip, comprising: providing an integrated circuit chip 848; providing an inherently insulating carrier tape 834 "Some suitable ultraviolet-degradable adhesives are sold under the designations "Adwill D-570M"; "Adwill D-628"; "Adwill D-650" and "Adwill D-675" as UV-curable dicing tape by the LINTEC Corporation of Tokyo, Japan" with a patterned metal layer 838 with a first side adhering to the insulating carrier tape; positioning the integrated circuit chip over a second side of the metal layer and electrically connecting 836 the integrated circuit chip to the metal pattern; encapsulating 860 the chip and the electrical connections; removing the carrier tape to uncover the entire first side of the metal layer.

Re claim 14: The method according to Claim 18, wherein said step of removing said carrier tape is preceded by the step of exposing said carrier tape to ultra-violet radiation.

Although Beroz does not appear to explicitly disclose all of the claim limitations in a single embodiment, Beroz discloses, "Numerous variations and combinations of the features discussed above may be utilized," and, "As these and other variations and combinations of the features discussed above can be utilized without departing from the present invention as defined by the claims, the foregoing description of the preferred embodiments should be taken by way of illustration rather than by way of limitation of the

claimed invention." Moreover, it would have been obvious to combine the particular claimed embodiments because it would facilitate the practice of the process of the embodiment of Fig. 24.

However, Beroz does not appear to explicitly disclose the following:

Re claim 18: A method for packaging an integrated circuit chip, comprising: positioning the integrated circuit chip over a second side of the metal layer; and then applying an insulating layer to the first side uncovering a portion of the first side of the patterned metal layer.

Nonetheless, in the abstract, and at paragraphs 167-170, Fukutomi discloses positioning the integrated circuit chip 54 over a second side of the metal layer 52; and then applying an insulating layer "solder resist" to a first side uncovering a portion of the first side of the patterned metal layer 52. Furthermore, it would have been obvious to combine this disclosure of Fukutomi with the disclosure of Beroz because it would facilitate electrical connection and heat dissipation.

However, the applied prior art does not appear to explicitly disclose the following:

Re claim 19: The method of claim 18, in which the insulating layer is thinner than the insulating carrier tape.

Notwithstanding, as reasoned from well established legal precedent, it would have been an obvious matter of design choice bounded by well known

manufacturing constraints and ascertainable by routine experimentation and optimization to choose these particular dimensions because applicant has not disclosed that, in view of the applied prior art, the dimensions are for a particular **unobvious** purpose, produce an unexpected result, or are otherwise critical. For that matter, applicant has not disclosed that the particular claimed dimensions are for **any** purpose or produce **any** result. Moreover, it appears prima facie that the process would possess utility using another dimension. Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular **unobvious** purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

Applicant's remarks filed in the appeal brief have been fully considered and have been adequately treated supra.

The art made of record and not applied to the rejection is considered pertinent to applicant's disclosure. It is cited primarily to show inventions relevant to the examination of the instant invention.

For information on the status of this application applicant should check PAIR:

Art Unit: 2822

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alternatively, applicant may contact the File Information Unit at (703) 308-2733. Telephone status inquiries should not be directed to the examiner. See MPEP 1730VIC, MPEP 203.08 and MPEP 102.

Any other telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (571) 272-1930. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.
The fax phone number for group 2800 is (571) 273-8300.



David E. Graybill
Primary Examiner
Art Unit 2822

D.G.
1-Jun-07